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Conference Abstract

A TDWG and GSC Collaborative Initiative To Develop an Environmental DNA (eDNA) Metadata Checklist

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Abstract

Environmental DNA (eDNA)-derived data, particularly DNA sequences and species occurrence records, are powerful resources for various applications, including biodiversity monitoring, biosecurity, and agricultural bio-surveillance. An important part of eDNA data's value lies in its reusability, which can be enhanced through the use of metadata that adheres to FAIR (Findable, Accessible, Interoperable, Reusable) data

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principles (Wilkinson et al. 2016, Abarenkov et al. 2023). While FAIR practices are gaining recognition within the eDNA community, adoption remains limited. A key barrier is that existing data standards, including Darwin Core (DwC, Darwin Core Task Group 2009) and the Minimum Information about any (x) Sequence (MIxS), lack sufficient terms to fully describe eDNA workflows, from sampling and processing to bioinformatic outputs (Takahashi et al. 2025).

To address this challenge, we have initiated a collaborative eDNA Task Group supported by the Biodiversity Information Standards (TDWG) and the Genomic Standards Consortium (GSC) organisations. We build upon current standardisation efforts to develop a comprehensive and interoperable eDNA metadata checklist for formal integration into the MIxS and DwC frameworks. See the task group descriptions at TDWG*[2] and GSC.*[1] Our goal is to ensure compatibility with, and seamless adoption by, major biodiversity and sequence data infrastructures, such as Global Biodiversity Information Facility (GBIF), Ocean Biodiversity Information System (OBIS), and International Nucleotide Sequence Database Collaboration (INSDC). This talk will present progress of the TDWG/GSC joint eDNA initiative, including our collaborative efforts with related working groups and initiatives, such as eDNAqua-plan, the Darwin Core Data Package, DNA-derived data extension to DwC, Minimum Information about any Ancient Sequence (MInAS), and the FAIR eDNA (FAIRe) initiatives (Takahashi et al. 2025). We invite contributions and collaboration to help shape a shared metadata framework that supports the growth, reuse, and long-term utility of eDNA data worldwide.

Keywords

global biodiversity records, metadata standards, FAIR principles

Presenting author

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Conflicts of interest

The authors have declared that no competing interests exist.

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Endnotes

*1 https://www.gensc.org/pages/projects/eDNA-project.html

*2 https://www.tdwg.org/community/gbwg/enviro/